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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional): 47994/D359

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)]

on April 26, 2006

Signature: Barbara Lopez

Typed or printed name: Barbara Lopez

Application Number	Filed
10/687,847	October 17, 2003

First Named Inventor: Michael Treiman

Art Unit	Examiner
1744	Sean Everett Conley

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

- [ ] applicant/inventor.
- [ ] assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)
- [X] attorney or agent of record. Registration number 44,641
- [ ] attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____

Customer No. 23363

Signature

Tom H. Dao
Typed or printed name

626/795-9900
Telephone number

April 26, 2006
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

[X] *Total of 1 forms are submitted.

This collection of information is required by 35 U.S.C. 132. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Barbara Lopez

Barbara Lopez

Confirmation No. 9588

Appl No.	: 10/687,847
Applicant	: Michael Treiman
Filed	: October 17, 2003
Title	: CHEMICAL PROPORTIONING AND DISPENSING SYSTEMS
TC/A.U.	: 1744
Examiner	: Sean Everett Conley
Docket No.	: 47994/D359
Customer No.	: 23363

ARGUMENTS ACCOMPANYING PRE-APPEAL BRIEF REQUEST FOR REVIEW

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Post Office Box 7068
Pasadena, CA 91109-7068
April 26, 2006

Commissioner:

Applicant is filing this paper concurrently with a Pre-Appeal Brief Request for Review (form PTO/SB/33) and a Notice of Appeal. For the reasons set forth below, Applicant submits that the Examiner has not provided the requisite bases for rejecting claims 1, 7-8, and 36 under §102(e) by providing a single prior art reference that discloses each and every element of the claimed method for diluting a concentrated solution. In addition, the Examiner has not established a clear prima facie case of obviousness as required under §2142 in rejecting claims 2-6, 9-25, 27-35, and 37-39. Of the rejected claims, claims 1, 10, 19, and 27 are independent claims. Claims 26 and 40-41 have been allowed.

§102(e) Rejection of Claims 1, 7-8, and 36

In the Final Action and again in the Advisory Action, the Examiner contends that Sand et al. disclose each and every element of independent claim 1 and of dependent claims 7, 8, and 36. In particular, the Examiner contends that all of the claimed elements including "a first ball valve (34) for controlling the flow of water and a single selection control with lever (52) for controlling the mixing of the concentrated chemical sterilant with the flow of water" are disclosed (Advisory Action, pg. 2).

Claim 1 clearly recites a "metering tip" for regulating flow, "a pressure regulating valve for regulating a working pressure of the water supply from a first pressure to a second pressure

and regulating the pressure regulating valve based on the first pressure to maintain the water supply source at substantially the second pressure"; and "a valve to mix water and concentrated sterilant". As shown and described throughout the specification, for example in FIG. 6, the system includes a pressure regulating valve 99 for regulating an inlet pressure to a desired outlet pressure and a separate valve 56 for turning the eductor 18, 20, or 21 on or off. The term "pressure regulating valve", shown in FIG. 6 as element 99 with recognized engineering symbol (half-circle with line terminating back to the valve), is known by those skilled in the art as a valve that takes a first operating pressure and reduce it down to a desired second operating pressure (which can be set by a user) and maintaining the second operating pressure within a designed range. The pressure regulating valve is designed to always stay open and to regulate inlet pressure to a desired outlet pressure.

Applicant submits that the term "pressure regulating valve" and the valve symbol 99 used in the drawings have accepted meaning in the relevant art as comparable to the term "Huber needle" in the medical device field, surge protector in the computer field, and resistors in the electrical engineering field. Thus, for example, one would not apply an on/off switch against a claim that recites a surge protector. As further discussed below, this is precisely the situation in the present application.

In paragraphs **[0042]** and **[0043]** of the specification, Applicant disclosed the following:

[0042] - "If the water content is too low, the pressure regulator can be regulated up. Once the regulator is adjusted to a desired set point, the regulator assists in maintaining a constant dilution ratio by maintaining the motive operating pressure at a constant level", and

[0043] - "Alternatively, once a metering tip is selected, the pressure can be adjusted to produce a desired admixture ratio. In either scenario, once the operating pressure is set, the pressure regulator ensures a constant pressure and a uniform admixture production. Without the pressure regulator, the motive source pressure to the eductor may fluctuate, as is typical of tap water line pressure. However, if an eductor incorporated in a particular system is rated for different operating pressure, then the motive source pressure can vary without deviating from the spirit and scope of the present invention".

Rather than rotating a valve handle to open or close a valve to start or stop water flow, a pressure regulating valve stays open and uses an actuator to regulate pressure from a first pressure to a second pressure. To start or stop fluid flow through the pressure regulating valve, a separate block valve (shown in FIG. 6 as item 56) is incorporated. A block valve simply turns water on or off and depending on the municipal water supply, allows water pressure to fluctuate, which is comparable to an on/off switch that allows the flow of electricity without regulation. To regulate, a surge protector is used.

Turning now to the Sand et al. reference, it is directed to a dispenser capable of selectively mixing one or more than one (up to four) concentrated solutions to produce a single

admixture of diluted solution. Sand et al. disclose four embodiments: FIGs. 4-5 (first embodiment), FIGs. 6-8 (second embodiment), FIGs. 9-10 (third embodiment), and FIGs. 11-12 (four embodiment). Broadly speaking, and as further discussed below, Sand et al. disclose an eductor system that uses a metering tip to produce a specified admixture ratio with a supposedly novel concept of incorporating two or more eductors that can be selectively controlled to produce two or more blends of admixture. A ball valve 34 is used to start/stop water flow through the eductors.

In each of the four embodiments, a selector body (62, 122, 162, 210) having an adjustable dial (68, 122, 138, or 142) allows the device to direct motive fluid (pressurized water) through one, two, three, or all four eductors. Each eductor is connected to a concentrated fluid reservoir (e.g., 38 and 40 in FIG. 2), which is connected to the chemical inlet of the eductor having a metering tip ("Typically, a metering tip (not shown) is inserted into the chemical port 94 for controlling the dilution ration of the first chemical fluid, in coordination with the dimensional sizing of the first eductor 88", Col. 4, line 67 to Col. 5, line 3). Depending on the number of eductors selected by the adjustable dial, once the valve 34 is rotated to permit water flow, a corresponding number of chemicals are blended.

The first embodiment (FIGs. 4-5) incorporates a bypass fluid channel 90 (FIG. 5). (See, e.g., Col. 5, lines 15-22) If the adjustable dial is set to bypass, the entire motive fluid entering the system through the ball valve 34 will flow through the bypass channel 90 and no chemical will be diluted. The remaining three embodiments do not include this feature.

In all the embodiments, a block valve 34 (FIG. 2) is used to either turn on or turn off the motive fluid (pressurized water) supply ("[i]n some applications, the selection control includes a position wherein no mixed fluids are emitted from the outlet 48, and thus the inlet valve 34 may be omitted or not routinely used." Col. 4, lines 42-45. "The motive fluid is received at an inlet valve 34, depicted as a ball valve. . ." Col. 4, lines 23-24, emphasis added). The selector dial in each of the four embodiments determines the number of chemicals to be blended. The valve 34 is not used to regulate water flow or pressure (i.e., to achieve a certain flow rate or line pressure). Instead, the valve is used to simply supply (i.e., open or close) the dispenser 30 with pressurized water, which then flows through the number of eductors selected by the selector dial. Blending ratio is regulated by the metering tip located in each of the four eductors and the flow through which of the four eductors depend on the position of the adjustable dial.

Thus, unlike the claimed method, which uses water supply having a regulating valve for regulating the working pressure of the water source supplied to the eductor, the Sand et al. patent discloses an eductor system which uses a block valve 34. Because a block valve does not regulate the working pressure of a supply water line, the eductor systems disclosed by the Sand et al. patent are susceptible to water pressure fluctuations and hence admixture variations. This point is further exemplified by the '401 patent disclosure, which states that "in some applications,

the selection control includes a position wherein no mixed fluids are emitted from the outlet 48, and thus the inlet valve 34 may be omitted or not routinely used." (Col. 4:42-45).

Finally, even if the inlet valve 34 is distorted as suggested by the Examiner to be a pressure regulating valve, Sand et al. never disclosed the method of "regulating a working pressure of the water supply from a first pressure to a second pressure" as recited in claim 1, "adjusting a pressure regulating valve to adjust a water supply pressure from a first pressure to a second pressure and . . . maintaining the water supply pressure at substantially the second pressure" as recited in claim 10, "regulating pressure supplied by the motive source from a first pressure to a second pressure, which is lower than the first pressure" as recited in claim 19, or "regulate water pressure from a first pressure to a second pressure" as recited in claim 27.

In Sand et al., when the ball valve 34 is in a closed position, the water downstream of the valve is zero and the pressure upstream is supply line pressure. When the ball valve 34 is opened, it allows water at line pressure less the pressure drop through the ball valve 34 through to the system. If the inlet pressure increases during operation, so will the downstream pressure. The ball valve 34 in the Sand et al. system does not regulate the downstream pressure to a controlled second pressure as recited in the independent claims.

Accordingly, Sand et al. cannot anticipate claim 1 and dependent claims 7, 8, and 36 by disclosing each and every element of the recited method.

§103(a) Rejection of Claims 2-6, 9-25, 27-35, and 37-39

In rejecting claims 2-6, 9-25, 27-35, and 37-39, the Examiner relied on Sand et al. as the main reference and one or more other references to reject the claims. However, since none of the secondary references are relied on to show a pressure regulating valve for regulating a working pressure from a first line pressure to a second operating pressure, all rejections under §103(a) are defective.

Finally, Applicant submits that independent claims 1, 10, 19, and 27 all recite a second valve because the article "a" was used instead of "the" for all second occurrence of "valve".

Information regarding pressure regulating valves and a drawing symbol for the same are enclosed for your reference.

In view of the foregoing remarks, Applicant submits that the Office Action is not sustainable.

Should the Examiner have a need to speak with Applicant's attorney, he is invited to speak with the undersigned at the telephone number identified below.

Respectfully submitted,

CHRISTIE, PARKER & HALE, LLP

By _____

Tom H. Dao
Reg. No. 44,641
626/795-9900

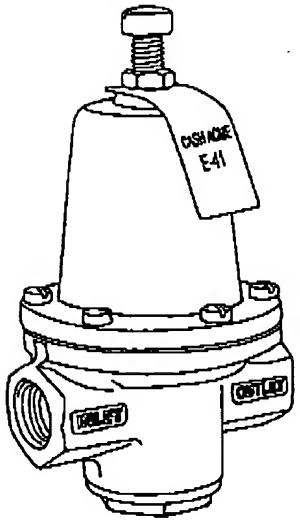
THD/bl
Encls: Information on Pressure Regulating Valves (5 pgs)

BL IRV1095837.1-*-04/26/06 9:32 AM

Specifications: AA002 - Issue Date: July 2003

E-41 Pressure Regulating Valve

DESCRIPTION



The Cash Acme E-41 Pressure Reducing and Regulating Valve automatically reduces a high inlet pressure to a lower delivery pressure and maintains the lower pressure within acceptable limits.

The Cash Acme E-41 Regulator provides high capacity and close regulation for more demanding and higher quality installations.

The **Cash Acme E-41 Regulator** is available in ½" through 2" sizes. The **E-41** is suitable for installation in domestic water supply lines (after the meter) in systems where inlet pressures do not exceed 300 psi or where system temperatures do not exceed 180° F. The valves are supplied with a standard delivery setting of 45 psi and have threaded female inlet and outlet connections.

Cash Acme's E-41 Pressure Reducing and Regulating Valve is similar in internal design to the **E-3** regulator with the exception that it is not fitted with an inbuilt strainer for systems which do not require the feature, or where separate, individual strainers are preferred.

FEATURES AND BENEFITS

Automatically reduces a high inlet pressure to a lower delivery pressure:
Maintains a lower pressure within reasonably close limits.

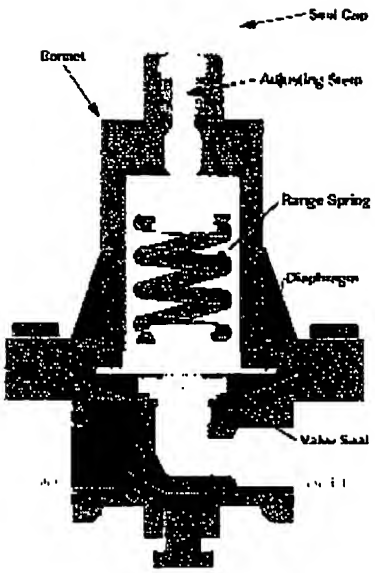
Every valve is tested through a range of tests prior to shipping:
Specify and install with confidence!

High capacities for higher quality installations:
Handles more volume with just one regulator.

Listed by ASSE 1003, CSA and IAPMO:
Inspector friendly, peace of mind!

SPECIFICATION

A pressure reducing valve shall be installed to deliver water at a controlled pressure. The valve shall be ASSE 1003 and IAPMO listed. The valve shall be a bronze body with a maximum inlet pressure of 300 psi. The valve shall be a yoke-type design with a buna seat disc and a stainless steel body seat. The valve shall be a **Cash Acme E-41 Pressure Regulator.**



Pressure Regulating Valves

For information about regulating valves, see page 409. For pipe size information, see pages 2-3.

Pipe OD to Pipe Size Conversions

Pipe OD	0.405"	0.540"	0.675"	0.840"	1.050"	1.315"	1.660"	1.900"	2.375"	2.875"	3.500"
Pipe Size	⅛"	¼"	⅜"	½"	¾"	1"	1¼"	1½"	2"	2½"	3"

ANSI IV Regulating Valves

Carbon Steel

- Maximum Inlet Pressure: 300 psi
- Outlet Pressure: See table
- Maximum Temperature: 650° F
- Minimum Differential Pressure: 10 psi

Sliding-gate seat provides quiet, accurate control and a tight shut-off that meets ANSI Class IV standards. For use with steam, air, gases, liquids, and many chemicals, these valves can handle large pressure drops. Adjust outlet pressure within the range with the top-mount screw control. ***Carbon steel*** body valves have a Type 303 stainless steel seat and Type 316 diaphragm. ***Type 316 stainless steel*** body valves have a Type 316 stainless steel seat and diaphragm.

Connections: NPT female.

To Order: Please specify outlet pressure range from table.

Pipe Size	Overall Length	Available Outlet Pressure Ranges, psi	Carbon Steel	Each	Type 316 Stainless Steel	Each
⅛"	7½"	2-23, 10-38, 20-55, 35-160, 95-220	46395K21	$772.21	47825K21	$1488.79
¾"	7⅝"	2-23, 10-38, 20-55, 35-160, 95-220	46395K23	776.18	47825K23	1495.19
1"	7¾"	1-5, 3-8, 5-20, 10-30, 20-45, 30-95, 60-160	46395K25	1373.61	47825K25	2253.85
1½"	9¼"	1-5, 3-8, 5-20, 10-30, 20-45, 30-95, 60-160	46395K27	1604.00	47825K27	2678.88
2"	10½"	1-5, 3-8, 5-20, 10-30, 20-45, 30-95, 60-160	46395K29	1982.15	47825K29	2897.35

Type 316 Stainless Steel Regulating Valves

- Maximum Inlet Pressure: Air/Water: 720 psi; Light Oil/Steam: 400 psi
- Outlet Pressure: See table
- Maximum Temperature: Air/Water: 180° F; Light Oil/Steam: 450° F
- Minimum Differential Pressure: 1 psi

Corrosion resistance and high pressure capability unite in these Type 316 stainless steel diaphragm-operated regulating valves. The outlet pressure is adjustable within the range you select. Body is Type 316 stainless steel. ***Air/water valves*** have a Buna-N seat and diaphragm. ***Light oil/steam valves*** have a stainless steel seat and diaphragm.

Connections: NPT female.

To Order: Please specify outlet pressure range from table.

Pipe Size	Overall Length	Available Outlet Pressure Ranges, psi	Air/Water	Each	Light Oil/Steam	Each
½"	4½"	2-30, 10-50, 30-125, 50-150	8099K11	$1226.72	8099K41	$1226.72
¾"	5⅛"	2-20, 10-35, 30- 75, 50-110, 105-150	8099K21	1548.32	8099K61	1548.32
1"	5⅞"	2-20, 10-45, 20- 60, 55-100, 90-150	8099K31	1844.08	8099K81	1844.08

Zinc-Plated Steel Inline Regulating Valves for Water

- Maximum Inlet Pressure: 200 psi
- Outlet Flow: See table
- Maximum Temperature: 180° F

Control the flow of potable water with these male×male nipple design inline valves. The control mechanism is a flexible orifice that varies its effective area inversely to the applied pressure. Valves keep water flow rates to within ±15% over a wide pressure drop range. Body is zinc-plated steel and washer is Buna-N.

Connections: NPT male inlet and outlet.

To Order: Please specify outlet flow from table.

Pipe Size	Overall Length	Available Outlet Flow, gpm	Each
1¼"	3"	10, 12, 15, 20, 25, 30	8107K31 ... $56.55
1½"	3"	10, 12, 15, 20, 25, 30	8107K33 ... 62.55
2"	3"	10, 12, 15, 20, 25, 30	8107K35 ... 131.76
2½"	4"	30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85	8107K37 ... 218.17
3"	4"	90, 95, 100, 105, 110, 120	8107K39 ... 278.53

Compact Type 316 Stainless Steel Regulating Valves for Water

- Maximum Inlet Pressure: 300 psi
- Outlet Pressure: See "To Order"
- Maximum Temperature: 140° F

These valves combine the corrosion resistance of stainless steel with a small 4¼"-high size. Use with deionized water and chemical solutions. Outlet pressure is adjustable within the range you choose. Body and spring are Type 316 stainless steel; diaphragm is Buna-N. Valves have a ¼" NPT female side gauge port.

Connections: NPT female inlet and outlet.

To Order: Please specify outlet pressure range in psi: 1-25, 3-50, 10-125, 50-175, or 100-300.

Pipe Size	Overall Length		Each
¼"	2⅝"	8119K44	$364.04
⅜"	2⅝"	8119K46	387.58
½"	2⅝"	8119K48	394.75

Thermoplastic Regulating Valves

The thermoplastic body offers high corrosion resistance. A knurled knob lets you easily adjust outlet pressure within the listed range. For use with water, oils, and many chemicals. **Connections:** NPT female.

Piston Design:

½"-1"

- Maximum Inlet Pressure: 150 psi @ 73° F
- Outlet Pressure Range: 10 to 80 psi
- Maximum Temperature: PVC: 140° F; Polypropylene: 180° F
- Minimum Differential Pressure: 5 psi

Valves have a piston design with Viton sealing O-rings for long life. Spring is PVDF-coated Type 304 stainless steel. PVC valve is gray. Polypropylene valve is white. 1½" and 2" valves have offset connections.

Pipe Size	Overall Length	PVC	Each	Polypropylene	Each
½"	3"	45965K11	$136.00	45865K21	$160.00
¾"	3 61/64"	45965K12	172.00	45865K22	212.00
1"	3 61/64"	45985K13	220.00	45865K23	242.00
1½"	4 43/64"	45965K14	290.20	45865K24	346.15
2"	4 45/64"	45965K15	446.60	45965K25	497.74

Diaphragm Design:

- Maximum Inlet Pressure: 150 psi @ 70° F
- Outlet Pressure Range: 5 to 75 psi
- Maximum Temperature: 140° F
- Minimum Differential Pressure: 5 psi

These valves have a Viton diaphragm that responds to changes in the upstream pressure, preventing the downstream pressure from exceeding the set pressure. Body is PVC and spring is PVDF-coated steel. Valves have a ¼" NPT female bottom gauge port. Color is gray.

Pipe Size	Overall Length		Each
¼"	4⅛"	4732K11	$252.27
½"	4⅛"	4732K12	277.62
¾"	4⅛"	4732K13	469.05
1"	5½"	4732K14	547.63
1½"	5½"	4732K15	635.12

Pressure Regulating Valves

For information about regulating valves, see page 409. For pipe size information, see pages 2-3.

Pipe OD to Pipe Size Conversions

Pipe OD	0.540"	0.675"	0.840"	1.050"	1.315"	1.660"	1.900"	2.375"	2.875"	3.500"
Pipe Size	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"

Bronze Low-Temperature Regulating Valves

- Maximum Inlet Pressure: 400 psi
- Outlet Pressure Range: See "To Order"
- Temperature Range: –320° to +150° F
- Minimum Differential Pressure: 5 psi

Durable bronze body handles cryogenic temperatures. Use to reduce, then maintain pressure within close tolerances. Outlet pressure is adjustable within the range. Seat is PTFE, diaphragm is bronze, and springs are series 300 stainless steel. Cleaned and packaged for oxygen service.

Connections: NPT female.

To Order: Please specify outlet pressure range: 20-100 psi or 75-250 psi.

Pipe Size	Overall Length		Each
1/4"	3"	49165K38	$236.68
3/8"	3 7/8"	49165K49	313.85
1/2"	4 1/2"	49165K59	456.30
3/4"	5 1/8"	49165K69	517.98
1"	5 7/8"	49165K79	703.47

Bronze Pilot-Operated Regulating Valves

- Maximum Inlet Pressure: 400 psi
- Outlet Pressure Range: See "To Order"
- Maximum Temperature: 400° F
- Minimum Differential Pressure:
  5 psi @ inlet pressure of 10-50 psi
  10 psi @ inlet pressure of 51-120 psi
  15 psi @ inlet pressure of 121 psi and up

Maintain precise control—the pilot-operated design of these valves keeps outlet pressure constant regardless of changes to the inlet pressure. Use the screw cap to adjust outlet pressure within the range. Furnished with a lock and two keys (keyed alike) to discourage tampering with your setting. Valves have a bronze body, bronze and Type 304 stainless steel internal parts, and a stainless steel diaphragm. *Air valves* have a Buna-N seat. *Steam valves* have a Type 304 stainless steel seat.

Connections: NPT female.

To Order: Please specify outlet pressure range in psi: 5-50, 10-100, 40-150, 50-200, or 100-300.

Pipe Size	Overall Length	Air	Each	Steam	Each
1/2"	4 1/8"	8097K31	$836.00	8097K21	$836.00
3/4"	4 1/8"	8097K33	872.05	8097K23	872.05
1"	4 1/2"	8097K34	930.81	8097K24	930.81
1 1/2"	5 1/4"	8097K37	1176.11	8097K27	1176.11
2"	6 3/8"	8097K39	1541.26	8097K29	1541.36

Compact Brass Regulating Valves

2 Way

- Maximum Inlet Pressure: 250 psi
- Outlet Pressure Range: See "To Order"
- Maximum Temperature: 180° F
- Minimum Differential Pressure: 10 psi

At approximately 4 5/16" high, these valves are built for air and water service jobs with limited installation space. Outlet pressure is adjustable within the range. Valves have a brass body and an integral brass strainer to protect working parts. Diaphragm and seat are Buna-N. *2-way valves* have a side inlet and outlet. *3-way valves* have one inlet and two outlets (first outlet is pipe size, second outlet is 1/4" NPT female) for dividing flow or connecting a gauge.

Connections: NPT female.

To Order: Please specify outlet pressure range in psi: 2-30, 10-50, 25-90, 80-120, or 100-180.

Pipe Size	Overall Length	2 Way	Each	3 Way	Each
1/4"	2 1/4"	4677K51	$87.42	4677K61	$104.79
3/8"	2 1/4"	4677K55	87.42	4677K65	104.79

Brass Regulating Valves

2 Way

- Maximum Inlet Pressure: 400 psi
- Outlet Pressure Range: See chart
- Maximum Temperature: 180° F
- Minimum Differential Pressure: 2 psi

An aspirating action provides excellent regulation and high flow rates. Use with air, water, and gas. Body is brass, diaphragm is neoprene, and disc is Buna-N. Outlet pressure is adjustable within the range. *2-way valves* have an inlet and opposite outlet. *3-way/4-way valves* have one inlet, an opposite outlet, plus one left- and one right-side 1/4" NPT female gauge port. A 1/4" plug is furnished to close off one port and make a 3-way valve.

Connections: NPT female.

To Order: Please specify outlet pressure range from chart.

Pipe Size	Available Outlet Pressure Ranges, psi
1/4"	0-5, 2-35, 20-70, 60-125, 75-200, 100-250
3/8"	0-5, 2-35, 20-70, 60-125, 75-200, 100-250
1/2"	0-5, 2-25, 20-60, 40- 80, 75-125, 75-200, 100-250

Pipe Size	Overall Length	2 Way	Each	3 Way/4 Way	Each
1/4"	2 1/2"	5022K21	$151.34	5022K41	$163.04
3/8"	2 1/2"	5022K23	151.34	5022K43	163.04
1/2"	2 7/8"	5022K25	170.43	5022K45	184.92

Brass High-Pressure Low-Temperature Regulating Valves

- Maximum Inlet Pressure: 600 psi
- Outlet Pressure Range: See table
- Temperature Range: –320° to +150° F
- Minimum Differential Pressure: <1 psi

Reduce and maintain pressure within close tolerances while withstanding cryogenic temperatures and pressures up to 600 psi. Plus, valves are just 3 13/16" high and 2 1/4" long, so they fit in small spaces. Outlet pressure is adjustable within the range. Body is forged brass, seat is PTFE, and springs are series 300 stainless steel. Cleaned and packaged for oxygen service.

Connections: NPT female.

Pipe Size		Each
Pressure Range: 15-65 psi		
1/4"	47435K11	$125.13
3/8"	47435K21	125.13
Pressure Range: 75-175 psi		
1/4"	47435K12	125.13
3/8"	47436K22	125.13
Pressure Range: 100-250 psi		
1/4"	47435K13	125.13
3/8"	47435K23	125.13

Low-Temperature Regulating Valves

- Maximum Inlet Pressure: 400 psi
- Outlet Pressure Range: See "To Order"
- Temperature Range: –40° to +165° F
- Minimum Differential Pressure: 10 psi

A Viton seat makes these valves suitable for temperatures as low as –40° F. They have a T-handle for adjusting outlet pressure within the range and two 1/4" NPT female side gauge ports, 180° apart, for mounting gauges (not included). Diaphragm is nitrile with a PTFE liner. Body is brass with a nickel-plated bonnet. Valves are cleaned and packaged for oxygen service per CGA-4.1.

Connections: NPT female.

To Order: Please specify outlet pressure range in psi: 5-55, 40-110, or 100-200.

Pipe Size	Overall Length		Each
1/2"	3 5/8"	49305K21	$131.78
3/4"	4 11/16"	49305K22	162.79
1"	4 11/16"	49305K23	162.79